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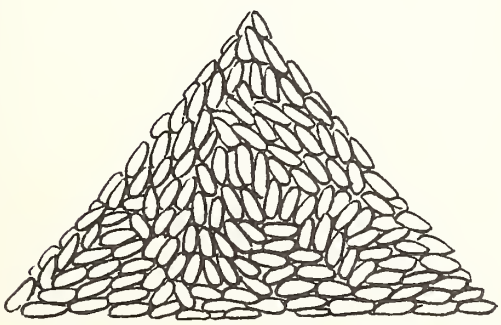
MARKETING MARGINS FOR MEDIUM-GRAIN RICE



MARKETING RESEARCH REPORT NO. 444

U. S. DEPARTMENT OF AGRICULTURE • AGRICULTURAL MARKETING SERVICE • MARKETING ECONOMICS RESEARCH DIVISION

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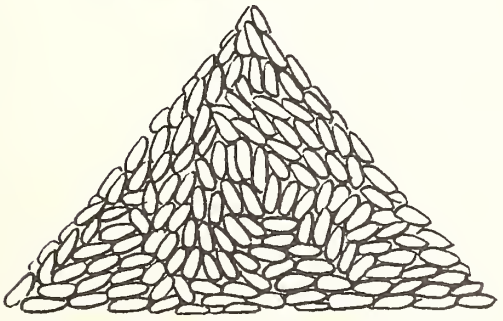
MARKETING MARGINS FOR MEDIUM-GRAIN RICE



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PREFACE

The study described in this report is part of a broad program of research on marketing margins of agricultural products designed to improve the efficiency of the marketing system. This program also contributes to public understanding of marketing processes.

A number of questions are considered in this report on marketing margins of medium-grain rice. What major changes have taken place since 1947? What are the major factors that contributed to these changes both in the long run and in the short run? How are the groups associated with marketing of medium-grain rice affected by these changes? Answers to these and related questions provide basic information for a more efficient marketing system for medium-grain rice.

Since some costs and charges, associated with processing and distribution, are similar for medium- and long-grain rice, findings based on medium-grain rice may also have limited applicability to long-grain rice at least in some phases of marketing.

Washington, D. C. December 1960

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SUMMARY

Marketing margins for medium-grain head rice sold at wholesale in 100-pound bags declined about 22 percent from an average of $1.91 in 1948-50 to $1.49 in 1956-58. In the same period gross farm-retail price spreads on packaged rice sold in food stores in 12 cities in the United States fell only slightly from 10.6 cents to 10.2 cents a pound. About two-thirds of the U. S. supply of medium-grain head rice is sold in 100-pound bags in domestic, territorial, and foreign markets. The remainder is distributed through domestic retail channels, mainly in 1- and 3-pound packages.

As marketing margins have declined farm shares of selling prices have increased. From 1948-50 through 1956-58 the farm share of wholesale prices rose from an average of 78 percent to 84 percent. In the same years the farm share of retail prices rose from an average of 39 percent to 43 percent.

These increases in farm shares and the decreases in marketing margins for medium-grain rice, which occurred in a period when marketing margins on most foods were increasing sharply, appear to be the result of at least four important factors: (1) Large increases in volumes of rice handled by millers in recent years have reduced operating costs per unit in spite of large increases in wage rates and prices of other inputs. The average volume of rice handled per mill in the U. S. nearly doubled in the decade 1948-58. (2) Improvements in milling, packaging, and distribution practices and technology also have contributed to the apparent reduction in marketing costs and margins. (3) The Federal price-support program for rice seems to have contributed to the reduction in margins by reducing price fluctuations and uncertainties. That is, with less price uncertainty millers could operate on somewhat smaller, but still safe, margins. (4) Increasing competition from specialty long-grain rice in the domestic market--quick cooking, parboiled, converted--forced many handlers of medium-grain rice to reduce their profit margins.

Annual changes in selected price spreads were highly variable. Changes in the two spreads, farm-to-wholesale and wholesale-to-retail, tended to move in opposite directions, indicating the relatively higher annual variability of wholesale prices in 100-pound bags. The most important factor by far, causing the annual changes in wholesale prices in 100-pound bags and consequently in spreads, was the annual volume of rice exports. Annual variations in exports were high and since 1947 they have represented on the average more than one-half of the total milled rice distribution, excluding brewers' rice.

MARKETING MARGINS FOR MEDIUM-GRAIN RICE

By Nicholas M. Thuroczy, agricultural economist
Marketing Economics Research Division
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INTRODUCTION

The general objective of this study is to provide information on marketing costs and charges for medium-grain rice. The specific objectives are to: (1) determine price spreads, margins, and functional shares, (2) analyze costs where available, and (3) determine the factors influencing short- and long-run changes in these price spreads for 1947-58.

Because of the lack of data for a detailed analysis, this study is restricted to a discussion of changes only in selected broad marketing margin categories. No attempt is made to break up the farm-to-retail spread into all its individual components either by marketing agencies involved in rice marketing or by cost items associated with bringing the rice from the farm to the consumer.

Studies of yearly changes and trends in the movements of the spread between alternative levels of prices show the unusual circumstances under which much of U. S. rice marketing has been carried out since 1947. Retail prices for 1947, for example, were high. The removal of price controls in July 1947, the strong foreign demand for U. S. rice, and the generally high level of farm prices all contributed to the extraordinarily high price levels. The effect of these forces was still in evidence in 1948. The imposition of price ceilings during the Korean War, 1951 and 1952, and the unusually heavy rice exports from limited supplies again tended to distort normal price relationships among various marketing levels. The effectiveness of the price-support program for rice and the subsequent government assistance in disposing of heavy surpluses abroad since 1954 affected normal marketings. Effective support prices tended to remove certain risks associated with short-run price expectations. As a result, margins in some phases of marketing may have been lower than under normal marketing conditions.

Largely because of the availability of retail data, price spreads and margins for medium-grain rice receive the primary attention in this report.

BACKGROUND

Rice production in the United States reached an alltime high of 64 million hundredweight of rough rice in 1954, more than 2.5 times the amount produced

in 1939. A sudden upsurge in rice production took place in the years immediately after World War II, reflecting an unusually high foreign demand.

About three-fourths of U. S. rice is usually produced in the Southern States, largely in Arkansas, Louisiana, and Texas, and the rest in California. In all these States rice is an important cash crop.

Consumption of rice in the United States and its territories has been increasing at essentially the same rate as human population. Consumption per person has remained nearly constant. Because of this, any excess of the domestic-territorial requirements must be exported to highly unstable foreign markets. Production levels in 1957-59 were below the peak reached during 1954, but they were still well above the immediate prewar levels and much in excess of domestic-territorial requirements.

Market Outlets

The average distribution of U. S. milled rice, by major outlets, during the period 1947-58 is shown in table 1.

Table 1.--U. S. milled rice: Average percentage distribution and annual variations in major outlets, marketing seasons 1947-48 through 1958-59 1/

Outlets	Proportion of total	Annual variation 2/
	Percent	Percent
Continental United States	34	11.2
Territories	14	5.4
Exports	52	35.4
Total	100	---

1/ Marketing season beginning August 1. Excludes brewers' rice.
2/ Coefficient of variation, based on actual volumes in respective outlets.

The largest market for rice lies outside the Continental United States and with the territorial requirements constitutes about two-thirds of the total disappearance of milled rice. In contrast, direct domestic consumption represents only 34 percent. Consumers purchase an estimated 60 percent of the rice for direct domestic food distribution in small packages, ranging from 6 ounces to 10 pounds per package although small portions are also retailed in 25- and 50-pound bags. The bulk of the remaining domestic distribution moves in 100-pound bags, largely for institutional use. Export and territorial shipments usually are in 100-pound bags.

Table 1 also indicates that export markets are the least stable and that on the average yearly fluctuations in exports were more than three times as

high as fluctuations in domestic disappearance during the period 1947-58. Exports show an annual variability of 35 percent while domestic outlets vary only 11 percent. Because of this relatively high variability, exports may be expected to exert strong influence on prices and consequently on price spreads.

Rice is generally distributed through conventional marketing channels. Millers buy rough rice from farmers or from dryers, and after processing it, which frequently includes packaging, they usually sell the rice through brokers. As a rule, millers do not sell rice directly to retail markets or abroad. The brokers sell the rice to jobbers or wholesalers, who handle most retail, territorial, and export sales.

Relative Importance of Medium-Grain Rice

Even though medium-grain rice represented only about 21 percent of all rice produced in the United States in the late 1950's, about 38 percent of all rice consumed in the Continental United States was medium-grain rice. Of the other types of rice, long-grain represented about 55 percent and short-grain only about 7 percent of the direct food use. The South is the main supplier of the domestic medium-grain rice market.

Not all the rice used in domestic food consumption is packed in small packages for consumers. During the marketing season 1956-57 about 8.2 million hundredweight of all types of milled rice, excluding brewers', was shipped to the domestic market for food. Of this amount, approximately 4.6 million hundredweight, or 60 percent, was shipped in consumer packages of 10 pounds or less.

There is no direct information available on how much of the medium-grain rice is sold in retail stores. However, since 38 percent of the total domestic milled-rice market during 1956-57 was medium-grain rice, total distribution of milled medium-grain rice indicates that about one-third was distributed in retail packages and two-thirds in 100-pound bags or in bulk.

This study assumes that medium-grain rice is sold at retail in 1-pound packages. Since data on various sizes of packages in the retail category of 10 pounds or less are not available, it is not possible to estimate accurately the proportion of 1-pound packages in the total. However, it is believed, and the census report on milled rice distribution partially supports this belief, that the bulk of the 10-pound-or-less retail market represents containers of 3 pounds or less in size. The 1-pound package is the predominant size sold at retail in the 12 cities used in this study in determining the retail price level. 1/

1/ Atlanta, Ga., Baltimore, Md., Chicago, Ill., Cincinnati, Ohio, Cleveland, Ohio, Detroit, Mich., Kansas City, Kans., Minneapolis, Minn., Philadelphia, Pa., Pittsburgh, Pa., St. Louis, Mo., Scranton, Pa.

A general knowledge about the usual differentials for other sizes of packages makes it possible to extend these margins and costs for a 1-pound package to cover other sizes of packages.

The weighted seasonal average prices at the three main levels of marketing of medium-grain rice, together with the selected price spreads, are shown in table 2. In most years, annual changes in prices indicate that they moved

Table 2.--U. S. medium-grain rice: Weighted average farm and wholesale values, retail price, and price spreads per pound, and exports of southern rice, marketing seasons 1947-48 through 1958-59 1/

Marketing season 2/	Farm value	Wholesale value	Retail price	Spreads: Farm to retail	Spreads: Farm to wholesale	Spreads: Wholesale to retail 3/	Exports of southern rice
	Cents	Cents	Cents	Cents	Cents	Cents	Million cwt.
1947	9.4	12.3	20.6	11.2	2.9	8.3	7.4
1948	7.4	9.1	18.8	11.4	1.7	9.7	8.7
1949	5.9	7.6	16.3	10.4	1.7	8.7	8.3
1950	7.3	9.5	17.2	9.9	2.2	7.7	9.0
1951	7.1	9.5	16.9	9.8	2.4	7.4	13.0
1952	8.6	11.0	18.5	9.9	2.4	7.5	14.4
1953	8.0	9.1	18.6	10.6	1.1	9.5	10.6
1954	4/8.2	8.9	17.8	9.6	.7	8.9	5.6
1955	4/7.4	9.0	17.3	9.9	1.6	8.3	11.0
1956	6.9	8.6	17.1	10.2	1.7	8.5	20.1
1957	8.1	9.6	17.9	9.8	1.5	8.3	12.2
1958	8.0	9.3	18.5	10.5	1.3	9.2	10.3

1/ The method and source of computing values and prices are described in the Appendix.

The following seasonal weights are used for the averages: Farm value--monthly values, August-January, based on farm prices for Zenith in Louisiana weighted by average mill receipts of medium-grain rice in Louisiana in 1953-56. Wholesale value--monthly prices, August-July, quoted at New Orleans for Zenith and weighted by average monthly shipments of medium-grain rice by Louisiana mills in 1953-56. Retail price--monthly retail prices, October-September, for medium-grain rice for 12 cities(weighted by weights provided by BLS) weighted by August-July monthly average mill shipments of medium-grain rice in 1953-56.

2/ Marketing season beginning August 1 except for retail price, in which case the marketing season is assumed to begin October 1.

3/ Nature of the price data makes it necessary to assume that the packaging is not performed by the millers. Later in the report this operation is transferred to the rice milling function.

4/ Value factors for Zenith head rice as announced by the Department of Agriculture are used rather than actual prices received for calculating farm-equivalent values because in these 2 years a substantial amount of medium-grain rice moved into Government storage. Since 1956 only negligible amounts moved into Government storage.

in the same direction. However, observation of the fluctuations of the selected spreads indicate that movements of prices from year to year have not been parallel. The seasonal volume of exports from the South also reveal yearly fluctuations suggesting some relationship between exports and spreads (table 2). 2/

Farm-to-Retail Spread

The relationship between retail price and farm value is shown in figure 1. Both prices have fluctuated since 1947 and generally in the same direction. A slight upward trend is apparent in both price series since 1949.

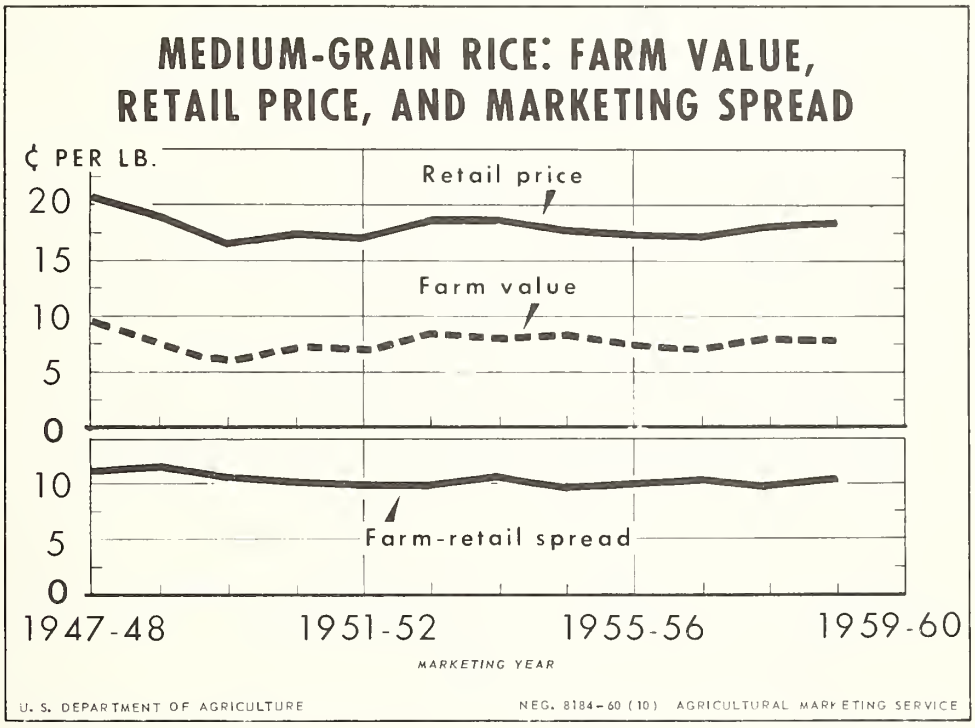

Figure 1

These observations, however, do not show the annual changes and the trends which may have taken place in the spread between the two values. The gross spread between farm value and retail price reveals fluctuations over years but without an apparent trend since 1949 (fig. 1). Various marketing costs and charges are included in the gross spread between farm value and retail prices. Because in many areas of marketing costs have increased since 1949, these higher costs must have been offset by lower costs in other phases of marketing if the gross spread remained steady. Thus, in some phases of marketing increased efficiencies have been achieved.

2/ Southern rice exports include both long- and medium-grain rice. In view of the lack of data on medium-grain rice exports alone, total southern rice exports are used in this report to indicate the overall level of foreign demand for U. S. rice, including foreign demand for medium-grain rice.

This study covers three major levels of marketing for medium-grain rice: farm, wholesale, and retail. 3/ Consequently, the gross spread between farm and retail can be conveniently divided into two major components. One is the spread between wholesale prices of 1 pound of milled head rice (based on the wholesale value of rice at the mill in 100-pound bags) and the farm equivalent of a pound of milled head rice. This is the gross mill margin. The second is the spread between the retail price of 1 pound of rice and the mill price of a pound of head rice (based on wholesale value of head rice in 100-pound bags). This is the retail margin.

Farm-to-Wholesale Spread

The farm-to-wholesale spread for medium-grain head rice is applicable to almost all medium-grain rice marketed since a considerable amount of packaged rice in the domestic market is sold by mills on the basis of 100-pound bags plus a markup or charge for packaging.

The relationship between farm and wholesale values for rice is shown in figure 2. Both series indicate yearly changes with an apparent parallel movement. There is a slight upward trend in farm values since 1949. Figure 2 also shows that the absolute spread between the two series fluctuated year after year with a fairly clear downward trend. It appears that since 1949 greater

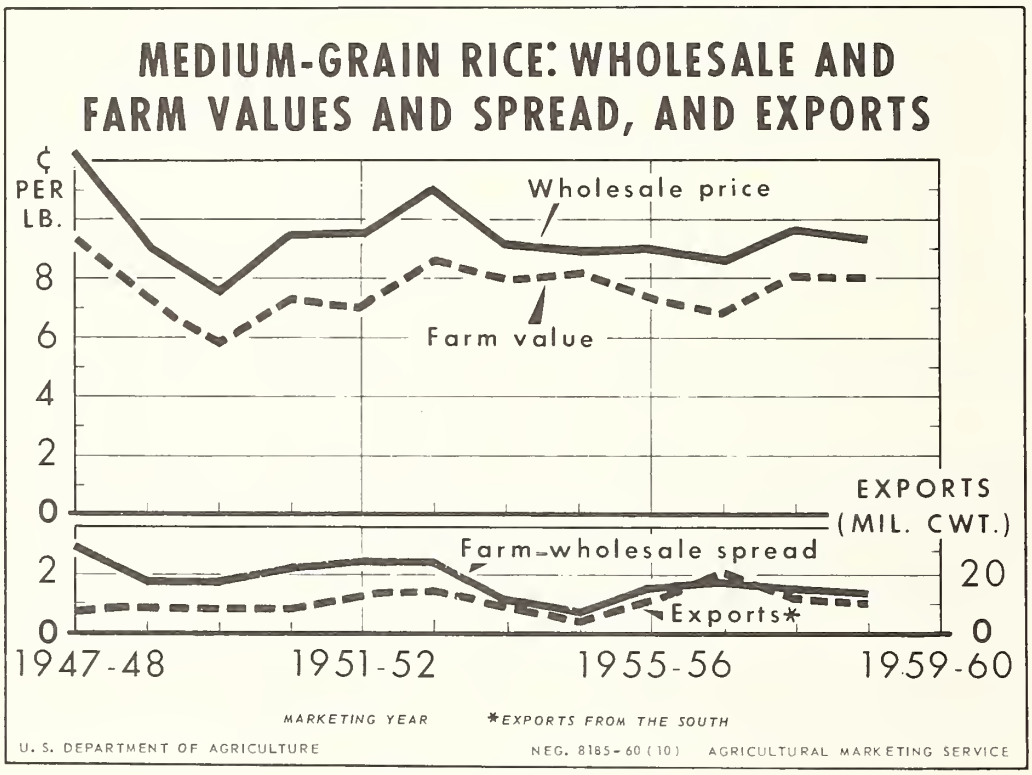

Figure 2

3/ Wholesale prices in this report refer to quotations in 100-pound bags only.

efficiencies achieved in the wholesale marketing of medium-grain rice were responsible, at least in part, for the narrowing of the entire spread between farm value and wholesale prices of rice in 100-pound bags.

The spread between the farm and wholesale value for rice is made up of two broad categories. One is the actual processing or milling costs, and the other is the residual, the major item of which is profit.

Milling Costs

No data are available on yearly changes in milling costs. However, there is evidence which suggests that, despite the increase in the cost of labor and other material, the total per-unit cost of milling has not changed significantly since 1947. Improved production methods and better utilization of productive resources by the milling industry may have contributed to the relative stability of milling costs. According to Bureau of the Census reports the average labor costs per worker from 1947 to 1954 increased about 31 percent in the rice milling industry. Although the Bureau of the Census does not give a detailed report on costs other than labor and utilities, these costs also have increased considerably since 1947. Without more efficient utilization of milling resources, costs of milling per unit undoubtedly would have moved upward. According to the report of the Bureau of the Census in 1947, there were 78 mills operating in the South which milled about 23.9 million hundredweight of rough rice. In 1954, there were 72 mills in the South with a combined volume of 42.4 million hundredweight. Thus, in 1947 the average volume per mill was 306,400 hundredweight but in 1954 it was 593,000 hundredweight. As a result the percentage of mill capacity utilized nearly doubled. 4/ Part of the increase in the utilization of mill capacity may also have been due to the closing of smaller mills in the period 1947-54. On a per-unit basis, the increased utilization of plant capacity undoubtedly offsets the increase in costs of labor and other material. 5/

It has been estimated that the average cost of milling 100 pounds of rice in 1956-57 was about $1. 6/ If this cost is allocated to head rice only, on the basis of an average of 80 percent, (the proportion of miller's total return from the sale of head rice), the cost of milling 1 pound of head rice would be about 1.2 cent, including administrative and selling expenses but excluding profits.

Residual

Because of the relative stability in milling costs since 1947, the longer run trends and the annual variations in the gross mill margins must be largely

4/ Despite this increase in utilization of plant capacity, the milling industry still operates at a fairly low level of capacity.

5/ The 31-percent increase in labor cost did not materially alter its cost per unit. Statistics, partially based on Bureau of the Census data, show that in 1947 labor cost amounted to 20.9 cents per 100 pounds of rough rice milled; in 1954 it was 20.2 cents per 100 pounds.

6/ Nicholas M. Thuroczy and Woodrow A. Schlegel. Cost of Operating Southern Rice Mills, U. S. Dept. Agr., Mktg. Res. Rpt. No. 330, 54 pp., illus. 1959.

attributed to changes in the residual element of the margin. Profits or windfall gains and losses resulting from price uncertainty are a major item in the residual. Changes in gross mill margins therefore mean changes in profits also.

Changes in the gross mill margin appear to be associated with changes in the annual volume of southern rice exports (fig. 2). Moreover, exports seem to be associated not only with short-run (year-to-year) fluctuations but also with longer run changes in mill margin.

The direct relationship between annual changes in the spread and in exports can be explained by the differences in the seasonality of farm and mill sales including exports. The bulk of farm sales are usually made early in the season, while export sales do not have such a strong seasonal pattern. Any yearly changes in export demand mainly influence wholesale prices, at which level most export sales are made. Thus, when exports are at a high level, they exert an upward pressure on wholesale prices and mill margins. When export sales are low, they tend to depress wholesale prices and narrow the annual spread per unit between milled-rice values at the mill and farm values.

The decline in the gross mill margin since 1949 can also be attributed in part to the increase in exports. When domestic consumption remains fairly stable, higher levels of exports provide a greater volume for the milling industry and lower operating costs.

The average gross mill margin in the period 1948-50 was 1.9 cents per 1 pound of milled rice. In the 3 marketing years 1956-58 the average gross mill margin declined about 22 percent to about 1.5 cents per pound. The average exports of milled rice from the South in 1948-50 were about 8.7 million hundredweight, which increased 63 percent by 1956-58 to an annual average rate of 14.2 million hundredweight.

The main implication of the yearly variations in gross mill margins for the milling industry is that millers can seldom operate under a well-protected per-unit margin. Mill profits largely depend upon speculative gains and losses because there is no futures market for rice. Since the unstable export markets are the main cause for the variations in mill margins, mill profits per unit tend to be unpredictable.

Despite its short-run problems, the milling industry has been making good advances towards more efficient operations and more efficient utilization of productive resources. Millers in the late 1950's were able to operate at a smaller gross margin than before, partially because of greater volume. Also, the relatively stable prices which tend to remove a significant proportion of the risk associated with short-run price expectations enable the millers to operate at reduced, but safer, margins.

Wholesale-to-Retail Spread

The wholesale-retail margin is applicable to about one-third of all milled medium-grain head rice sold. Almost all of this rice is marketed in the

United States, and the bulk is sold in packages of 3 pounds or less.

The wholesale and retail price movements for medium-grain rice since 1947 are shown in figure 3. As in other price series both fluctuated widely, and yearly changes seemed to be moving in the same direction. However, annual changes in the two series do not seem to have the same magnitude. Thus, the spread between the two prices is expected to show fluctuations from one year to the next (fig. 4). A slight upward trend in the spread is observed.

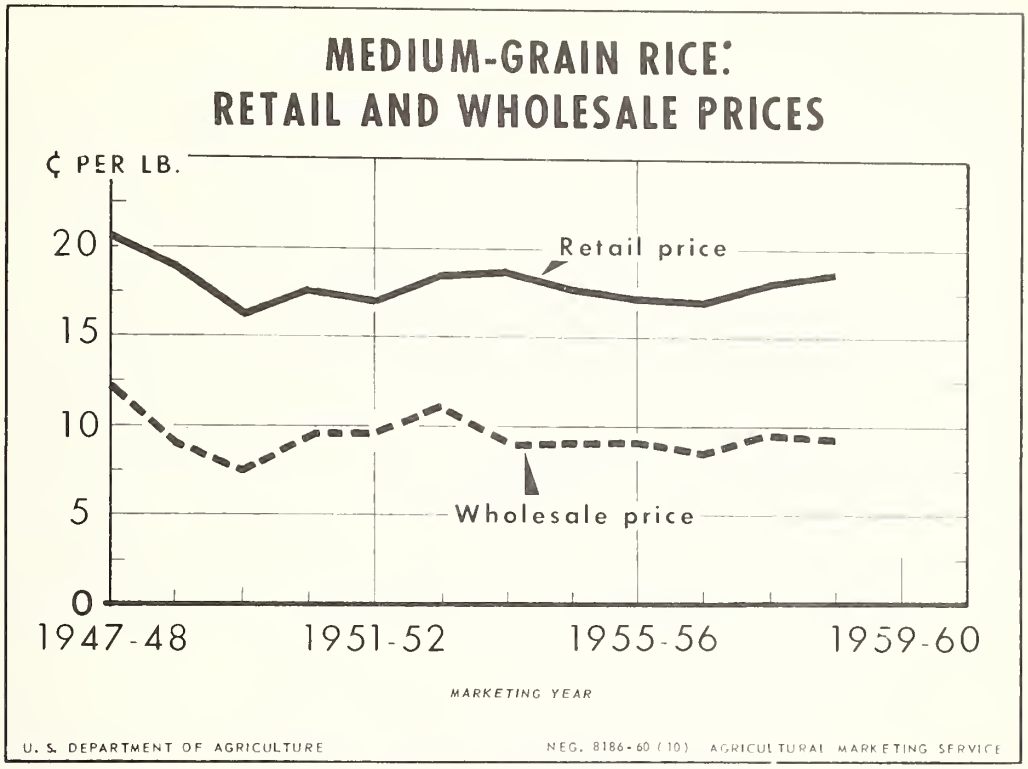

Figure 3

As in the farm-retail spread, it is difficult to analyze the factors which account for the changes in the wholesale-retail spread without additional information on the major segments of this margin. Nevertheless, the short-run effects of exports are fairly clear (fig. 4). Annual variations in the wholesale-retail spread are related to annual variations in exports. Whenever exports are high, the spread tends to narrow because high export demands will raise wholesale prices while retail prices will remain unaffected. Low levels of exports have the opposite effect on the spread. This is due to the seasonal nature of purchases by retailers. Domestic buyers for the retail trade tend to concentrate their purchasing activities during the early season when rice supplies are ample and frequently contract rice for later deliveries. Under these conditions the annual retail prices reflect more readily wholesale prices prevailing early in the season. Export demands then, which are not restricted to a few months, may have little or no impact on retail prices.

Because of the limited information available on components of this spread, the present study covers only three major segments of this spread: packaging, transportation, and other.

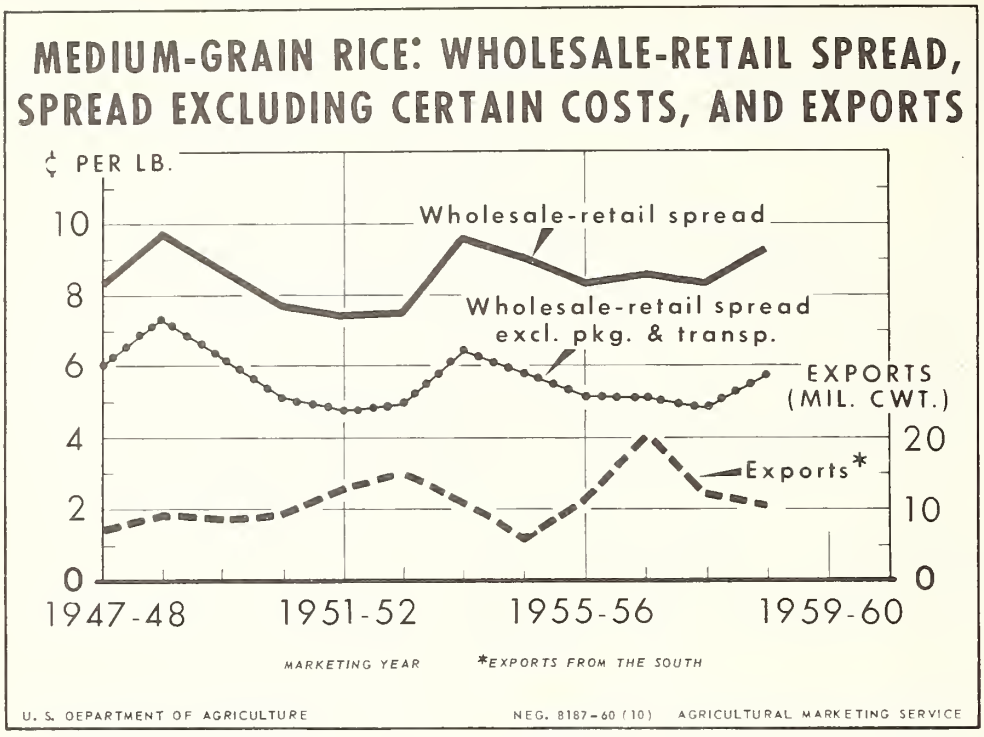

Figure 4

Packaging

Data are not available on yearly changes in packaging costs and charges. However, industry sources indicate that packaging charges, or the conventional packaging markups, under which many millers sell packaged rice, have increased moderately since 1947. Despite the increase in labor costs and material only one significant change took place in markups, and this was in 1953. After the removal of price ceilings for rice, packaging charges for ordinary rice rose from 15 to 20 percent, or about 30 to 40 cents per hundredweight. Two main factors seem to be responsible for this relative stability in markups: Improved production methods and competition among rice millers for the ordinary packaged-goods markets. These forces offset much of the rising costs in labor and material.

Packaging markups generally vary from mill to mill and from one rice variety to another. Also, the type of container in which rice is sold has a bearing on markups. In September 1958, a representative markup for packaged ordinary rice placed in 1-pound cellophane bags ranged from $2.30 to $2.50 per 100 pounds. This markup was in addition to the wholesale price of rice in 100-pound burlap bags, f.o.b. mills. Considering that a substantial amount of rice is normally packaged in more expensive cartons, the average packaging charge in 1958 may have been about 2.5 cents per pound for ordinary rice. This charge includes the cost of the container in which rice is placed, which amounts to about 1 cent for a 1-pound cellophane bag or carton.

Transportation

There has been a considerable increase in railroad transportation costs from New Orleans, La., to the 12 cities since 1947. The average transportation cost from New Orleans to the 12 selected cities in 1947 was only $0.64 per hundredweight while in 1958 it was $1.12. This means that transportation costs have nearly doubled since 1947, from 0.6 cent to 1.1 cent per pound of packaged rice.

Other functions

The other functions include all costs, charges, and profits of distribution from the time packaged rice is landed in the rice-consuming cities and is placed on the shelf of the retail store. The major proportion of this residual represents local distribution costs and charges, including commissions and profits for wholesaling and retailing.

The slight upward trend in spreads between wholesale and retail prices since 1949 in figure 4 suggests that most of this trend is accounted for by the upward movement in transportation and packaging charges. In fact, if the estimated packaging and transportation charges are removed from the spread, the residual will indicate a slight downward trend. Thus, in 1948-50 wholesale-retail spreads, excluding packaging and transportation charges, were estimated to be about 6.2 cents per pound while in 1956-58 they declined to 5.2 cents, or about 16 percent. Increased efficiency and a reduction in windfall gains tended to offset much of the increase in costs of labor, material, and transportation and contributed to the relative longer run stability of the farm-retail spread.

THE FARMER AND THE CONSUMER

About two-thirds of all medium-grain rice is sold at the wholesale level in 100-pound units. These sales are made mainly to export, territorial, and domestic institutional markets. About one-third of all medium-grain rice is sold in retail markets in consumer packages of 3 pounds or less. Since the farmer's share of the wholesale and the retail prices will differ, these two major outlets must be analyzed separately.

Farmer's Share of the Wholesale Price

Earlier discussions of the spread between farm value and wholesale prices have indirectly suggested that the farmer's share of the wholesale dollar might be tied to the size of the gross mill margin. This was expected because exports, one of the main determinants of mill margins, tended to influence mill prices much more than farm prices. Since mill margins indicated a downward trend, the farm share of the wholesale dollar would be expected to show an upward trend (fig. 5). Thus, on the average, in 1948-50 the farmer's share of the wholesale dollar was only 78 cents when gross mill margins averaged 1.9 cents per pound of head rice. During 1956-58, the farmer's share of the wholesale dollar, on the average, increased to 84 cents and gross mill margins were reduced to 1.5 cents per pound.

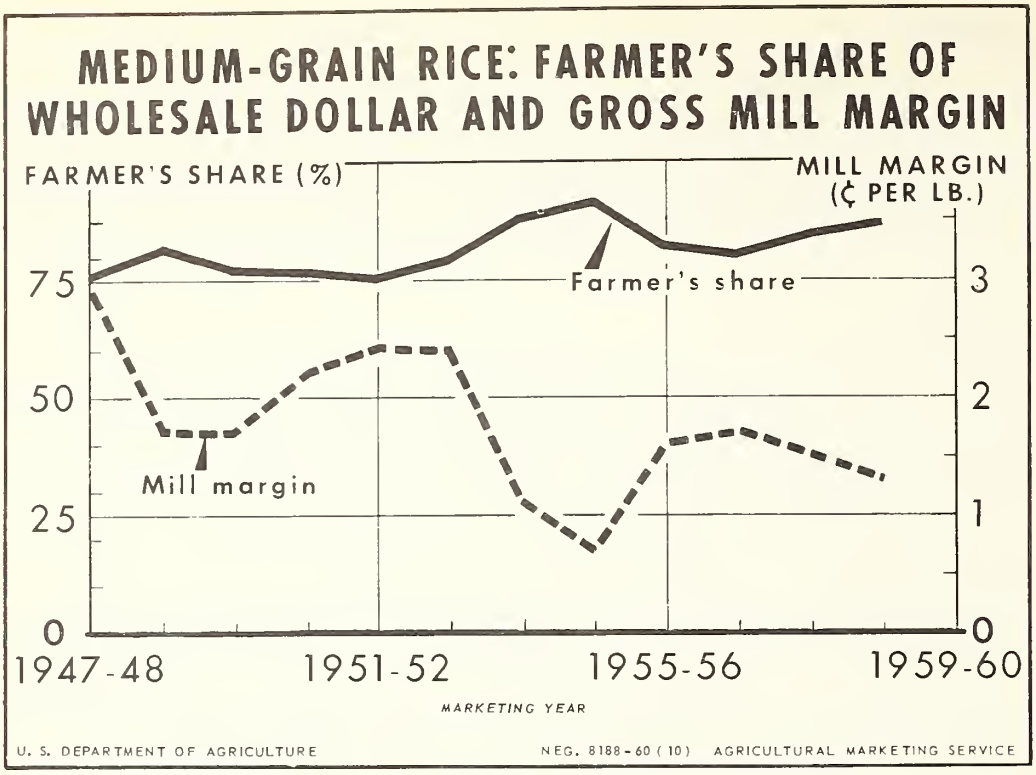

Figure 5

Yearly changes in absolute mill margin tend to create opposite effects in the yearly farm share of the wholesale dollar (fig. 5). Thus, whenever mill margins were at relatively high levels the farmer's share of the wholesale dollar appeared to be low. In times of low mill margins the farmer's share tended to be relatively high. Since exports appear to be one of the primary determinants of mill margins, the farm share of the wholesale dollar will also be influenced indirectly by the annual level of exports (fig. 6). Whenever annual exports are high, the farm share of the wholesale dollar will be relatively low since a high level of exports will increase wholesale prices only. A low level of exports on the other hand will tend to increase the farm share. This, of course, does not mean that the farmer is necessarily better off when exports are low. The farm share is not a measure of farm income. In the wholesale price of rice, the farm share tells only what percentage of the wholesale value the farmers get without regard to the actual wholesale value.

The upward trend in rice exports tended to increase the farm share of the wholesale dollar (fig. 6). A greater volume of exports permitted the milling industry to utilize its plant capacity more fully and to pass on some of the economic gains to the farmer. The increase in the farm share of the wholesale dollar may also have been influenced by the recent decline in the production of medium-grain rice. There has been a notable switch in rice production since 1956 from medium- to long-grain rice, largely reflecting more favorable support rates for long-grain rice. Reduction in medium-grain rice production and especially in free market supplies in some instances created such a scarcity that some rice millers were willing to pay premiums over support rates to obtain this kind of rice. This, of course, tended to reduce the miller's margin.

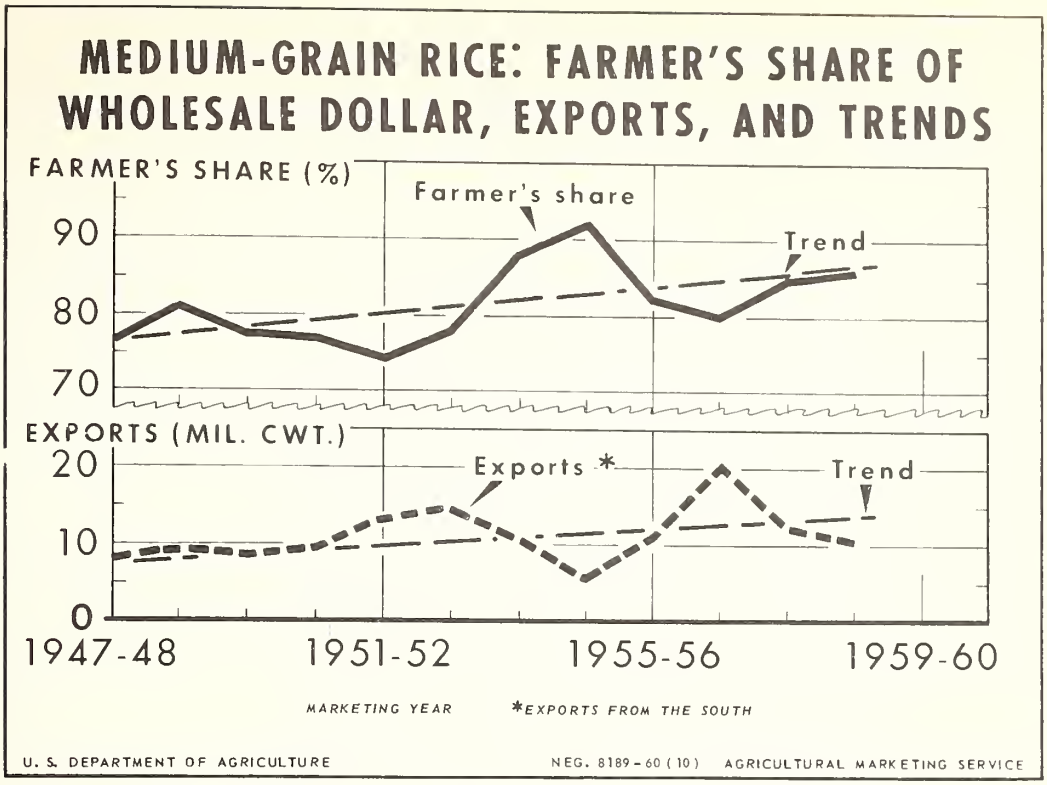

Figure 6

Farmer's Share of the Retail Price

The farmer's share of the retail dollar has increased since 1948 (figs. 7 and 8). For the period 1948-50 the farmer's share of the retail dollar was only 39 cents, but in 1956-58 it averaged 43 cents. The increase in the farm share has been achieved in the face of rising costs for labor, material, and transportation. Contributing to the increase was the reduction in the gross mill margin and in the cost of local distribution of rice.

Another factor of considerable importance has been the competition from ordinary long-grain and speciality rice, like parboiled and converted, in the retail trade. Handlers of ordinary medium-grain rice must often forego profits to stay in competition with other types of rice.

As noted earlier, effective price-support programs tend to stabilize wholesale prices and consequently retail prices. If there is enough free market rice of each type, all handlers of rice can operate at a reduced but safer margin. Part of the benefit may be passed on to farmers in higher farm prices, thereby increasing the farmer's share of the sales dollar.

There is a tendency for the farmer's share to fluctuate inversely with the farm-retail spread, suggesting that in any given season farm prices are more stable than retail prices. This is to be expected since the season for sales from farms is very short in relation to the season for buying by retailers. Thus, whenever retail prices change during the season, for example, because of fluctuations in wholesale prices under the impact of export demand, retail

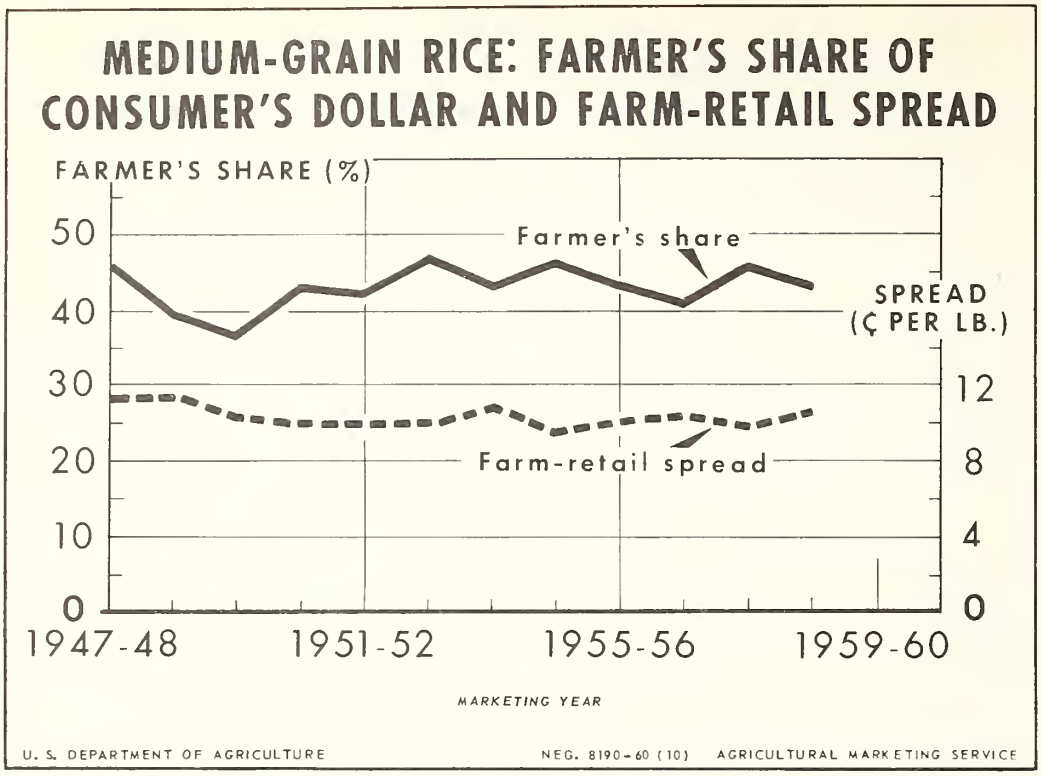

Figure 7

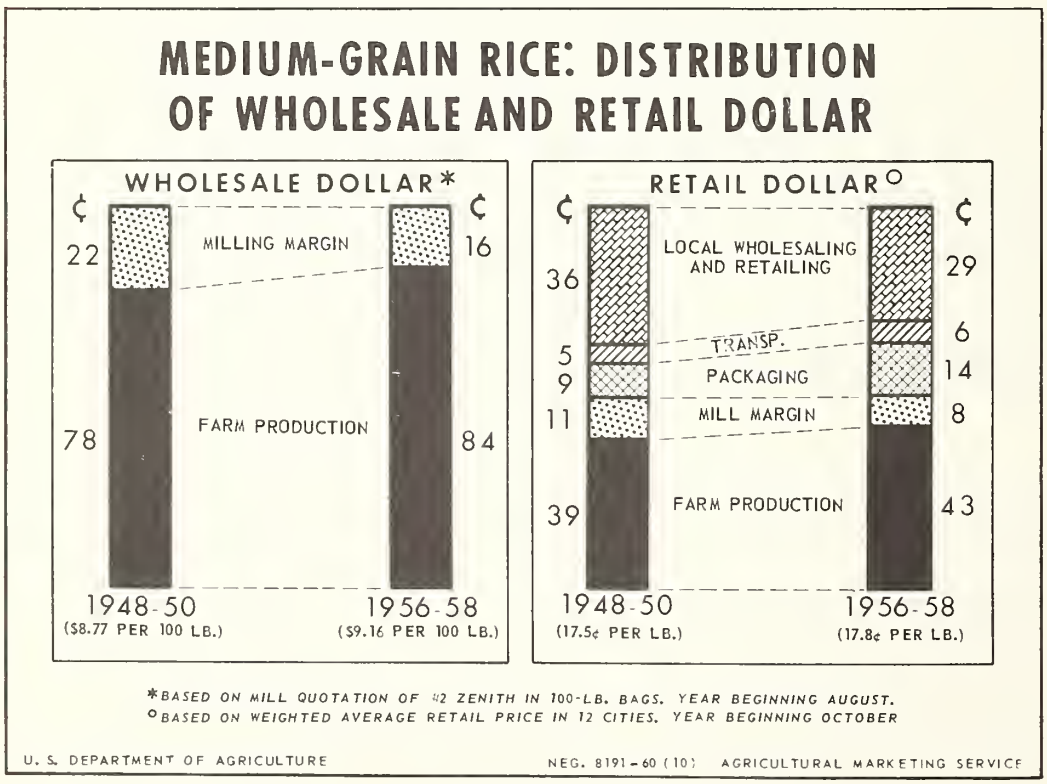

Figure 8

prices will be more affected than farm prices. High retail prices will increase the spread and reduce the farmer's share and vice versa.

Distribution of Consumer's Dollar

Distribution of the consumer's dollar for packaged rice by major marketing agencies during 1948-50 and 1956-58 is shown in figure 8. Some trends are apparent in the distribution. The farmer's share increased 4 cents between 1948-50 and 1956-58. The proportion of the retail dollar spent on processing (milling and packaging, and mill profits) increased from 20 cents to 22 cents. The increase was largely due to increases in packaging costs which more than offset reductions in the milling margin. A 1-cent increase is observed in the cost of transportation. Local distribution costs were reduced from 36 cents to 29 cents.

On the average, consumers were paying proportionately less for processing and distribution of medium-grain rice in 1956-58 than in 1948-50.

APPENDIX

Price Series

In a study of price spreads between different marketing levels for rice, it is necessary that price series at the different levels refer to the same type of rice. The Bureau of Labor Statistics publishes regularly retail prices for short- and long-grain rice. However, before 1954 BLS collected retail prices for short-grain rice only. Of the 20 large cities for which monthly retail prices are published, only 12 have reported prices of short-grain rice since 1958. Thus, the average retail prices used in this report are based on weighted prices for these 12 cities. 7/ Prices are for whole grain rice packaged in 1-pound cellophane bags or cartons. These prices exclude quick-cooking, converted, and brown rice.

This study assumes that the retail prices for short-grain rice reflect prices for medium-grain rice. The difference between short- and medium-grain rice is small and the consumer and the rice trade seldom make a distinction between them. This is particularly true when the prices, cooking quality, and biological characteristics are considered. It is quite common to denote medium-grain rice as short grain.

7/ Actually these 12 cities do not truly represent U. S. average retail prices because the cities are not located in the heaviest rice-consuming areas. But retail prices are not available for the South, where rice consumption is heavy, and prices for the 12 cities are the only source from which average retail prices can be estimated. Since much of the rice in retail outlets is sold in 3-pound packages in the South and in 1-pound packages in the 12 cities, the 12-city average may represent fairly well the U. S. market for rice in 1-pound packages.

Medium-grain rice usually represents about 90 percent and short-grain 10 percent of the domestic market for these two types of rice. With such a proportion of the domestic market, medium-grain rice is undoubtedly priced as short-grain, particularly since in most retail stores long-grain is the only type which has the length of the grain marked on the package.

That medium-grain rice is priced as short grain is also demonstrated by the Bureau of Labor Statistics' prices for some cities. Several of the States in which some of the 12 cities are located did not receive short-grain rice at all during 1955-57 according to the survey conducted by the Department of Agriculture. And yet monthly retail prices for short-grain rice are published by the Bureau of Labor Statistics in these cities.

Because retail prices for short-grain rice reflect prices mainly of medium-grain rice, prices for medium-grain rice in 100-pound bags were obtained to represent wholesale prices. Monthly price quotations for Zenith at New Orleans are used. Zenith is a leading variety of medium-grain rice, and New Orleans is an important center for marketing medium-grain rice. The price quotations refer to No. 2 rice, 100-pound burlap bags, f.o.b. mills or warehouse.

Prices received by Louisiana farmers for Zenith are used as farm prices. Louisiana is one of the leading producers of medium-grain rice. These monthly farm prices are available for only about the first half of the marketing season. They reflect No. 1 and No. 2 grades since 1952 and Extra Fancy and Fancy grades before 1952. 8/

Seasonality

This report covers trends in the annual realized margins rather than in concurrent margins. 9/ For this reason the leads and lags between alternative price series were investigated.

Average monthly prices since 1947 at the three main levels of marketing--farm, wholesale, and retail--are shown in table 3. Corresponding to these prices the average monthly movements of medium-grain rice at different levels of marketings also are shown.

The heaviest sales of medium-grain rice from the farms are usually made during the first 3 months of the season: August through October. In these months more than 75 percent of the medium-grain rice crop is sold off the farm; after that sales usually taper off. The first 6 months of the season usually

8/ New standards for rice became effective in 1951. The new No. 1 and No. 2 grades, however, approximate fairly closely the Extra Fancy and Fancy grades, respectively, used before 1952.

9/ Because rice is a slow-moving and storable commodity, margins based on current prices would unduly distort the spread between prices at alternative levels of marketing.

Table 3.--Retail, wholesale, and farm prices of medium-grain rice, 1947-58 monthly average, and seasonal movement, 1953-56 monthly average

Month	Price per 100 pounds			Seasonal movement	
	Milled rice		Rough rice, farm 3/	Farm sales	Mill shipments
	Retail 1/	Wholesale 2/			
	Dollars	Dollars	Dollars	Percent	Percent
August	18.32	9.37	4.75	31.4	13.5
September	18.23	8.81	4.64	33.7	20.2
October	17.87	9.05	4.91	13.7	13.9
November	17.81	9.47	5.08	4.8	7.5
December	17.83	9.66	5.17	3.3	5.6
January	17.87	9.70	5.33	3.6	8.0
February	17.91	9.77		3.4	6.8
March	18.00	9.89		2.2	5.8
April	18.08	9.95		1.1	4.8
May	18.07	10.04		.7	5.4
June	18.12	10.17		.7	4.1
July	18.11	10.24		1.4	4.4
Av. or total	18.02	9.68	4.98	100.0	100.0

1/ The weighted average price of medium-grain rice for 12 cities for 1-pound package multiplied by 100.
2/ Wholesale price of Zenith at New Orleans.
3/ Farm prices received for Zenith in Louisiana.

cover over 90 percent of the seasonal farm sales. 10/ Farm prices follow a reverse seasonal pattern. Farm prices are lowest when movement of medium-grain rice is heaviest. When farm sales of rice begin to taper off, farm prices begin to rise. For example, the heaviest farm sales of medium-grain rice usually are in September, and farm prices are lowest.

Mill prices and the volume of mill shipments closely follow the pattern set by farm prices and farm sales. August-October mill shipments are usually the heaviest, and consequently mill prices are the lowest in these months. September again has the lowest prices and heaviest shipments.

In view of the similar pattern of movement of farm and mill prices (and volumes) there appears to be no measurable lag between farm sales and mill receipts. This is partly due to the rice mills' usually being located in the main rice-producing areas.

10/ These sales figures are actually based on mill receipts of medium-grain rice by Louisiana mills in the period 1953-56. Under the assumption that there is not much lag involved between farm sales and mill receipts, seasonality of farm sales of medium-grain rice can be approximated through mill receipts. Monthly sales figures in some years of course may be somewhat different. However, the August-January farm sales in most years account for at least 90 percent of total sales.

Comparison of the monthly wholesale and retail prices reveals that retail prices on the average tend to lag behind wholesale prices by about 2 months. Table 3 shows that the low wholesale prices are reached during September and that the low retail prices are reached 2 months later in November. This is largely due to two factors: (1) Distributors (or retailers of packaged rice) usually have a 2-months' supply of rice and therefore their purchases will also be made on a 2-month cycle. Thus, current retail prices of packaged rice will largely reflect purchases made 2 months before. 11/ (2) At least part of this lag may be attributed to the transportation of rice from the producing areas to the 12 cities. Most of these cities are located a considerable distance from New Orleans.

There is no direct information available on monthly consumption rates of packaged rice. However, according to the approximate 2-month lag described above, mill shipments may suggest such a seasonality. Most milled rice is purchased and shipped in the fall and winter months. Thus, consumption is also the heaviest in these months.

To approximate the annual realized spreads, therefore, farm prices are weighted by farm sales, wholesale prices by mill shipments, and retail prices also by mill shipments, but lagged 2 months.

Farm Value

Wholesale and retail prices are directly comparable since both refer to the same physical commodity. The only difference between the two prices is that the wholesale prices are quotations for rice in 100-pound burlap bags at rice mills or at warehouses in the rice-producing areas, while the retail price reflects prices of rice in 1-pound consumer packages in the 12 consuming cities considered in this report.

Farm prices, however, cannot be directly compared with either wholesale or retail prices. Farm prices refer to the rough rice, the form in which rice usually leaves the farm. 12/ Practically all rice produced in the United States for domestic consumption must be milled. Different varieties have different conversion rates, and each variety may also fluctuate in its milling yields from year to year and from farm to farm because of differences in weather conditions at the time of harvest. One hundred pounds of Zenith rough rice usually averages about 49 pounds of whole milled rice and about 19 pounds

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11/ This of course does not mean that every buyer of packaged rice will operate on a 2-months' inventory cycle. Frequently purchases are made only for current needs--perhaps only for a month. This is true particularly in times of future price uncertainty. Purchases may be made for delivery 3 or even 6 months later. It must therefore be stressed that the 2-month lag assumed in this report is based on an average of all types of lags and all types of purchasing activities that occurred during the period studied.

12/ Rice may leave the farm also in green form, in which case it enters a commercial dryer or a dryer attached to the mills. Farm prices, however, always refer to dried rough rice.

of other products--second heads, screenings, and brewers' rice. 13/ It also produces bran, polish, and hulls; the hulls have little value.

To convert rough rice into milled equivalent of head rice two factors are used. The head yield of Zenith is one factor. On the basis of 49 pounds of head yield, the farmer has to sell about 204 pounds of rough rice to enable the miller to produce 100 pounds of milled head rice. Except for 1951, no information is available on yields of head rice of the Zenith variety before 1954. Yearly data on head yield for Zenith are used for converting rough rice into milled equivalent for years for which such information is available. For years without such information, the average head yield of the available 6 years (1951 and 1954 through 1958) is used.

The other factor determining the farm value of milled rice is the proportion of total mill revenues derived from the sale of head rice only. Since 1947 this percentage has ranged from 71 percent (in a year with a very low head yield for Zenith) to 88 percent (in a year with a very high head yield for Zenith). In obtaining these percentages it is assumed that the farmer's return from the milled head-rice market will be in the same proportion as the return to the miller.

Using these two factors the following methods are used to determine the farm value of milled rice: (1) Farm prices for Zenith are multiplied by the percentage of mill returns from the sale of milled head rice to obtain the proportion of farmer's return from the sale of milled rice, and (2) the resulting value then is divided by the head yield of Zenith and multiplied by 100.

13/ Second heads and screenings in this study are considered byproducts. The Bureau of Labor Statistics collects prices only for whole kernel rice.

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